Attachment 16

FLORIDA MANATEE RECOVERY ACCOMPLISHMENTS 2001 ANNUAL REPORT

U.S. FISH AND WILDLIFE SERVICE
JACKSONVILLE, FLORIDA

ACKNOWLEDGMENT

The FWS would like to acknowledge the efforts of all our partners who assist in rescue, recovery, and rehabilitation, as well as other recovery activities. A special thanks goes out to all the field station staff who consistently go beyond the call of duty. We are grateful for the technical support, valuable information, and vast exposure our partners have given to this program.

Cover: Artwork done by Bryan Bryson, compliments of FWC.

INTRODUCTION

The Manatee Rescue and Recovery Program has recently completed its 27th year in its effort to recover the Florida manatee. The success and efficiency of this program is based on the dedication and commitment of numerous organizations, private citizens, and Federal, State, and local agencies. This report summarizes activities and accomplishments associated with manatee recovery during the calendar year of 2001.

FEDERAL PROTECTION REGULATION

Endangered Species Act

The Endangered Species Act (ESA) of 1973, as amended, established policies and procedures necessary to identify and protect species which are endangered or threatened with extinction. The goal of the ESA is to recover a listed species to a level where protection is no longer required under the ESA. The U.S. Fish and Wildlife Service (FWS) defines "recovery" as the process by which the decline of an endangered or threatened species is arrested or reversed, and threats are neutralized so that its survival in the wild an be ensured.

The West Indian manatee, *Trichechus manatus*, (including both subspecies, the Florida manatee, *Trichechus manatus latirostris* and the Antillean manatee, *Trichechus manatus manatus*), is listed as endangered throughout its range. The Department of Interior's (Department) Secretary is responsible for administering the provisions of the ESA as they apply to this species. The FWS, under jurisdiction of the Department has management authority for the West Indian manatee. The daily management and coordination of manatee activities is conducted by the manatee recovery staff in the Ecological Services Field Office in Jacksonville, Florida.

Marine Mammal Protection Act

The West Indian Manatee is further protected on a federal level under the Marine Mammal Protection Act (MMPA) of 1972, as amended. The MMPA established as national policy, the maintenance of the health and stability of marine ecosystems and, whenever consistent with this primary objective, obtaining and maintaining optimum sustainable populations of marine mammals. Additionally, the MMPA established a moratorium, with certain exceptions, on harassing, hunting, capturing, killing or attempting to harass, hunt, capture or kill any marine mammal.

STATE PROTECTION REGULATION

In 1893, following depletion by early settlers, the Florida legislature mandated protection of manatees. In 1978, the Florida Manatee Sanctuary Act (FMSA) provided additional state protection. As a result of the FMSA, the Florida Fish and Wildlife Conservation Commission (FWC) was given the authority to protect manatees from disturbance, harassment, injury and mortality. This authority allows FWC to limit boating activities and regulate boat speeds in areas designated sensitive for manatee use.

POPULATION STATUS

The exact number of manatees that currently exist in Florida is unknown. A synoptic survey, conducted in January of 2001 resulted in the highest count to date of 3,276 individuals. Excellent survey conditions and unusually cold weather undoubtedly contributed to the heightened count. Although many experts agree that the present size of the manatee population has increased over the past decade, the extent to which this has occurred is largely unknown. Previous telemetry studies and the use of wintering sites during cold weather suggest that the manatee population in Florida consists of four distinct subpopulations: the Northwest, Southwest, Atlantic (including St. John's River north of Palatka), and St. John's River (south of Palatka). It has been noted that some interchange does exist among subpopulations; however, regional separation has enabled researchers and managers to better understand the population trends of the species in various areas.

Manatee status in the four regions is not consistent, and therefore does not reflect the population status as a whole. Data acquired over the last 25 years suggests that the Northwest and Upper St. John's River subpopulations are steadily increasing. These two subpopulations, however, account for less than 20% of the State's manatee population. The Atlantic subpopulation presents a different picture. During the 1980's this group appeared to be slowly growing; however, recent studies indicate that the numbers could be leveling off, or possibly even decreasing. The status of the Southwest region is still largely unknown. Preliminary analysis of population estimates indicate that this subpopulation may be decreasing. A Manatee Population Ecology and Management Workshop is being held in 2002 by the USGS Sirenia Project in conjunction with the USFWS. Scientists plan to present the latest population models and estimates for each manatee subpopulation. Information from this meeting will yield a clearer understanding of the population status and trends in each region and will be used to guide future decisions.

Known manatee mortality in the southeastern United States, 1974-2001.

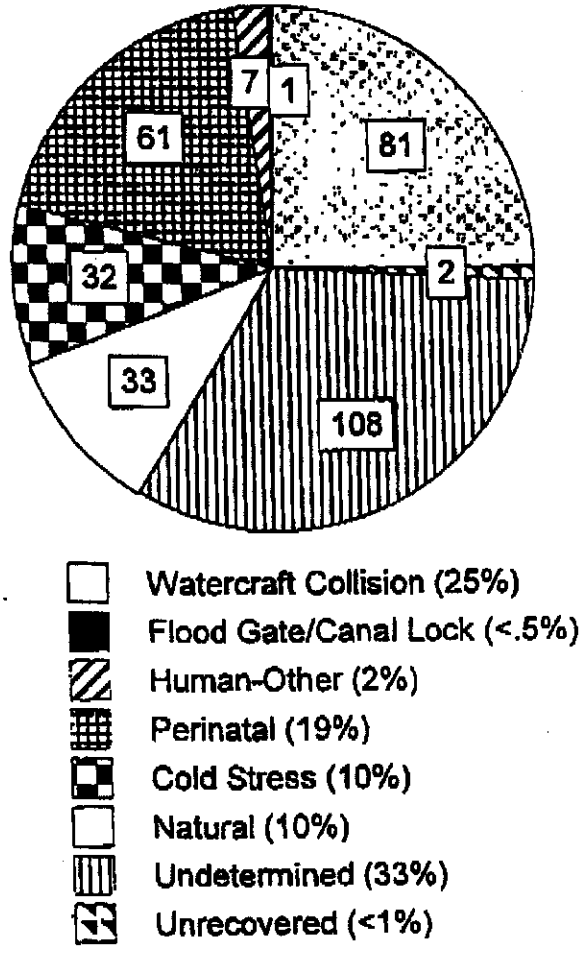
Cause / Year	74	75	76	77	78	79	80	81	82	83	84	85	86	87
Watercraft	3	6	10	13	21	24	16	24	20	15	34	33	33	39
Lock/Gate	0	1	4	6	9	8	8	2	3	7	3	3	3	5
Other Human	2	1	0	5	1	9	2	4	1	5	1	3	1	2
Natural	0	1	2	1	3	4	5	9	41	6	24	19	13	16
Perinatal	0	7	14	9	10	9	13	13	14	18	25	23	27	30
Undetermined	2	13	32	80	40	23	19	64	35	30	41	38	45	22
Out of Florida	1	0	0	1	0	1	2	1	3	0	2	4	3	3
Total	8	29	62	115	84	78	65	117	117	81	130	123	125	117

Cause / Year	88	89	90	91	92	93	94	95	96	97	98	99	00	01
Watercraft	43	50	47	53	38	35	49	42	60	54	66	82	79	81
Lock/Gate	7	3	3	9	5	5	16	8	10	8	9	15	8	1
Other Human	4	5	4	6	6	6	5	5	0	8	7	8	8	7
Natural	24	32	67	14	20	24	37	35	118	46	21	43	51	65
Perinatal	30	38	44	53	48	39	46	56	61	61	52	52	58	61
Undetermined	25	40	41	39	46	36	40	55	166	65	76	68	75	108
Out of Florida	1	8	8	1	3	2	1	2	1	4	12	6	6	11
Total	134	176	214	175	166	147	194	203	416	246	243	274	285	336

Manatee Mortality for 2001

In 2001, manatee mortality in Florida totaled 325 individuals. Of those, 28% (90 of 325) of manatee deaths were human-related. Included were 81 watercraft-related deaths, eight from other human-related causes, and one mortality in a water control structure. Records indicate that 2001 was the second worst year for total number of watercraft-related manatee deaths. Other causes of deaths included perinatal (62), cold stress (31), natural (34), undetermined (106) and unrecovered (2). Manatee carcasses were found in thirty-four Florida counties. Brevard County had the highest number of deaths (53), followed by Lee (51), Collier (31), and Volusia (25). Eleven manatee deaths were documented outside of Florida. Mortalities came from Georgia, Louisiana, North Carolina, South Carolina, Mississippi, and Texas.

Manatee Mortality in Florida by Cause of Death for 2001

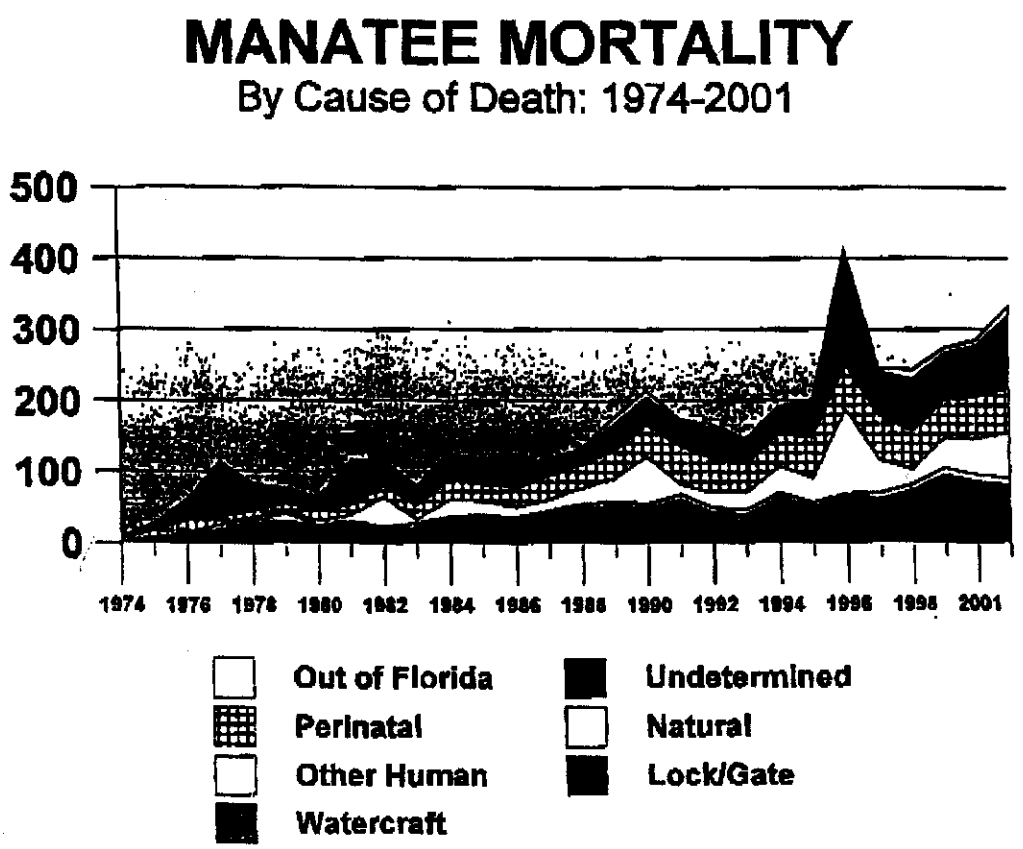


*Percentages were rounded to the nearest decimal, therefore, not yielding 100%.

RECOVERY EFFORTS-MANAGEMENT

The Department of the Interior, U.S. Fish and Wildlife Service, Ecological Services, Jacksonville Field Office has the management authority for manatee recovery activities. The FWS South Florida Field Office in Vero Beach assists in manatee recovery by conducting section 7 consultations in South Florida.

Historically, FWS has focused its efforts on reducing human-related manatee deaths. Initiatives include decreasing watercraft collisions, reducing hazards such as entrapment and crushing, in water control structures and entanglement in fishing gear, and protecting manatee wintering aggregation sites. Increased human population and development of coastal lands is a constant challenge for wildlife managers. Management decisions must constantly be designed and modified to reflect the ever increasing threats on manatee population and habitat.



Litigation

In 2000, a lawsuit was filed against FWS and U.S. Army Corps of Engineers (Corps). Allegations from Save the Manatee Club (SMC) and twenty-one various environmental organizations charged FWS and the Corps for violating the Federal statutes that protect the Florida manatee. Specific demands in the lawsuit included a revision of the recovery plan, the development of adequate biological opinions, the preparation of Environmental Impact Statements, and the assessment of cumulative effects of development projects in manatee habitats. In January 2001, an agreement to

settle the Federal lawsuit was made among all involved parties. Under terms of the settlement agreement, FWS agreed to adhere to certain time frames for completing several manatee conservation activities. These activities included: establishing new Federal manatee protection areas, developing regulations that allow for incidental take of manatees under the Marine Mammal Protection Act, and revising the manatee recovery plan. Additionally, FWS and the Corps agreed to improve procedures for reviewing permit applications involving construction of boating facilities in manatee habitat.

Endangered Species Act Interim Guidance Strategy for Manatees/MMPA Incidental Take Regulation for the Florida Manatee

In 2001, FWS published the "Endangered Species Interim Guidance Strategy for Manatees" as guidance until the promulgation of incidental take regulations under the MMPA. Currently, this guidance facilitates section 7 reviews of Federal actions and addresses takings issues through the MMPA's incidental take provisions. Specifically, the interim guidance applies to actions that may result in increased watercraft access in Florida. This process identifies conditions that allow FWS to determine when a proposed watercraft access facility will possibly have an adverse indirect effect on manatees. To reduce the indirect effects on manatees to an "unlikely to occur" level, individuals may seek permission based on conditions and measures identified by FWS's interim guidance.

Pursuant to plans to address takings issues through the MMPA's incidental take provisions, FWS is in the process of requesting authorization to "take" Florida manatees. In Florida, county, state and Federal agencies engage in activities that may result in the incidental, unintentional take of manatees by watercraft. Such activities include the use and regulation of watercraft in areas accessible to manatees. Currently, no authorization for the incidental, unintentional death, injury, or harassment of manatees caused by these management practices exist. FWS engages in, or has the authority to engage in all of the current use and regulatory activities; therefore, FWS may engage in actions that result in the incidental, unintentional take of manatees. As such, FWS has requested the development of incidental take regulations for its activities and the authorization of take associated with government activities related to watercraft in Florida. This rule-making will allow FWS to determine if take associated with watercraft use and regulation will have a negligible impact on manatees, after taking into account mitigating measures that would render the impact negligible when it may not otherwise meet that standard. A Notice of Proposed Rule Making outlining this proposal was published in the *Federal Register* in 2001.

Manatee Protection Areas

A major focus of manatee recovery efforts involves the establishment of manatee protection zones by both Federal and state agencies. These zones facilitate a reduction in the number of manatees harassed or struck and/or killed by watercraft in Florida by restricting boat speed and access in certain high use manatee areas. The reduction of boat speed affords manatees time to move away from approaching watercraft, thus reducing the chances of collision. Areas with limited access prevent the disturbance of manatees caused by waterborne activities.

This year FWS focused efforts on identifying areas that currently lack adequate protection. To address this problem, FWS met with Federal, state, and local managers and planners, law enforcement officers, and researchers involved in manatee protection. Five meetings were held with these parties in each quadrant of the state of Florida and coastal Georgia. Approximately 150 potential sites were identified as a result of these meetings. Following this effort, FWS hosted six public information meetings throughout the state to solicit public comments and suggestions regarding these sites. As a result, FWS published a Notice of Proposed Rule Making in 2001 naming 16 areas identified for additional protection. This was followed with a Notice of Rulemaking, published in the *Federal Register* on December 31, 2001 informing the public that FWS will designate a manatee refuge in the Barge Canal and Sykes Creek in Brevard County. The remaining 14 sites will receive Federal designation as either a refuge or sanctuary by December 2002. FWS has stated that they will consider deferring this effort if the State elects to protect these areas through the State rule-making process. To date, the State has adopted rules in 24 counties. Where appropriate, FWS endorses State rules and has the latitude to enforce these areas when they are appropriately marked.

Law Enforcement Initiatives

Compliance in manatee protection zones is another important aspect of manatee recovery; it is thought that with better compliance, fewer manatees will die. To promote compliance, FWS law enforcement officers implemented new task force initiatives throughout the State. In peninsular Florida all U.S. Coast Guard Stations also participated in law enforcement activities. FWS partnered with the Florida Fish and Wildlife Conservation Commission to conduct boater compliance surveys throughout the State of Florida. This collaborative effort determined the effectiveness of law enforcement initiatives and monitored boat compliance within manatee protection zones. Data indicated that boaters seemed to behave similarly to car drivers, responding to the presence of law enforcement with significant increases in compliance and decreases in speed. Results from this study will assist in future guidelines for Federal and State law enforcement divisions regarding increased compliance in manatee protection zones.

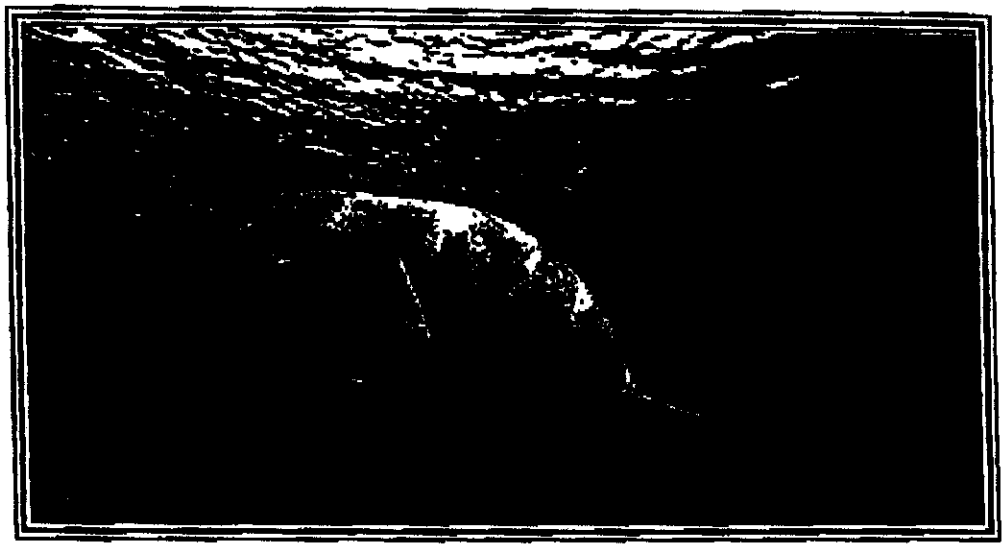
Refuges

Florida's coastal and riverine National Wildlife Refuges are used by hundreds of manatees. Refuge managers engage in species management activities to promote the welfare of manatees both on and around the refuge. Refuges are also active participants in law enforcement initiatives, enforcing manatee protection zones, minimizing harassment, and other activities. Visitors are provided with opportunities to observe and interact with manatees at the refuges and sanctuaries.

The Crystal River National Wildlife Refuge (CRNWR) was established specifically for the protection of the Florida manatee. It is located within Kings Bay, the headwater of the Crystal River which flows into the Gulf of Mexico. More than 300 manatees utilize this area for warm water during the winter months. Currently CRNWR manages the seven sanctuaries in Kings Bay that protect approximately 40 acres of essential manatee habitat. These sanctuaries are in effect from November 15 through March 31. Due to the large number of boaters, recreational divers, snorkelers, and swimmers that seek out the manatees, the refuge staff regulates marine activities, marks and maintains the sanctuary boundaries, and promotes compliance through law enforcement and

education. All local dive shops are under a Special Use permit issued by the refuge. The permit requires that all visitors view the "Manatee Manners" video and receive the leaflets that contain rules and regulations for swimming with manatees.

CRNWR conducted nine aerial surveys throughout the 2000-01 winter season. The number of manatees sighted ranged from 316-386 individuals. The Refuge currently conducts the only ongoing, long-term field studies of manatees (including year-round aerial surveys) undertaken by FWS. During 2001, refuge staff responded to 18 different reports of manatees in distress.



Additionally, other refuges around the State of Florida participate in manatee recovery. The Merritt Island National Wildlife Refuge maintains a manatee viewing area, the J.N. "Ding" Darling National Wildlife Refuge partners with a Ft. Myers manatee viewing and education center, the Ten Thousand Islands National Wildlife Refuge conducts manatee aerial surveys, and the Hobe Sound NWR and the Florida Panther NWR have developed manatee education and outreach programs.

Habitat Management

Essential manatee habitat includes foraging and freshwater sites, travel corridors, resting, cavorting, and calving areas, and warm water refuges. These areas are heavily influenced by human activities and must be properly managed to support species recovery. Human impacts include: destruction of seagrass beds, the modification of drinking sites (including new, artificial sites such as storm water runoff pipes and ditches, process water, etc.), the diversion of river courses, damming, construction of canals, and shoreline bulkheading. Waterborne activities such as boating have altered corridors and manatee use areas. Historical warm water refuges used by wintering manatees have also been

modified. Recent concerns over spring flows have been addressed including the reduction and/or loss due to groundwater withdrawals, the impacts to recharge areas and the alteration in ambient waters from development activities. Furthermore, winter distribution patterns of manatees have changed with the addition of industrial warm water outfalls.

To ensure that these changes do not have a significant, adverse effect on manatees, many State and Federal permitting programs and planning groups address such concerns. FWS relies on section 7 (consultations under the ESA) and the Fish and Wildlife Coordination Act to minimize the effect of construction on valuable manatee use areas. An interagency group ensures that aquatic plant control activities are balanced with the needs of manatees at wintering sites. Efforts to restore grassbeds have been addressed through coastal program activities. A Habitat Working Group is scheduled to convene in 2002 to address other habitat concerns.

Natural and industrial warm water refuge issues are being addressed through interim and long range planning. Extant industrial warm water discharges are made safe for manatees through the use of manatee protection plans, as defined in NPDES permit conditions. While the future status of these sites is unknown, it is apparent that some will be eliminated and others may operate in some diminished capacity. To address these concerns, FWS organized a Warm Water Task Force to review the current network of sites and develop plans for future changes. In 2001, the task force agreed to develop an adaptive management planning approach to minimize the adverse effects of these changes on manatees.

FWS was also involved in State activities focused on protecting warm water sites. As a member of the State appointed Springs Task Force, FWS assisted in drafting the management plan for Florida springs. Additionally, FWS worked closely with the St. Johns Water Management District to establish minimum flow levels at Blue Springs, a primary warm water refuge for manatees located in the upper St. Johns River.

Water Control Structures

Water control structures are a persistent source of human-related manatee mortality. An interagency task force was developed to find solutions to reduce the number of animals killed in these structures. Efforts include refitting flood control gates with pressure sensitive devices and navigation lock doors with acoustic sensors to stop gate and lock closures when manatees are present. Since 1997, four flood gate structures (ten gates) and two navigation locks have been equipped with these devices. Efforts appear to be beneficial, as only one manatee death was documented as a result of a water control structure in 2001.

Entanglements

Every year manatees become entangled in monofilament fishing line, crab trap float lines, and other types of fishing gear. As a result of such entanglement, many manatees are rescued, treated, and released back into the wild. Severe entanglement cases result in amputation (e.g., a pectoral flipper), permanent captivity, or even death. In 2001, 15 manatees were rescued due to entanglements in monofilament, float lines, and crab pots. An Entanglement Working Group (EWG), led by FWS

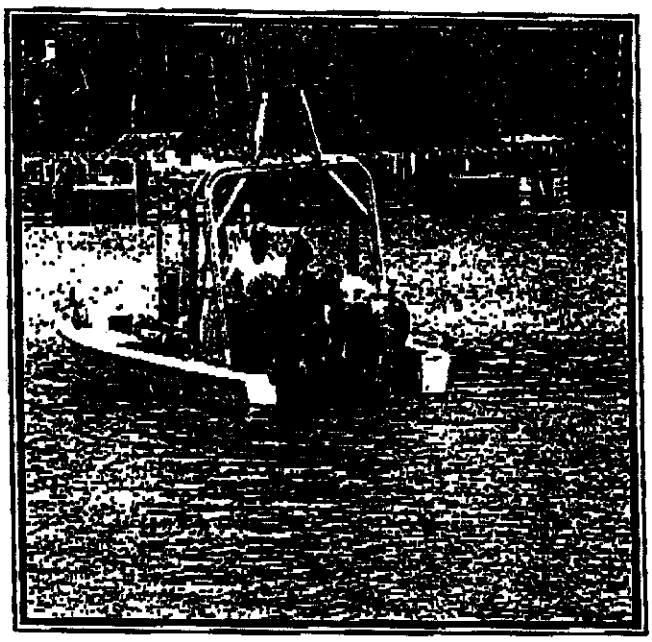
staff, was developed to address manatee entanglement issues. This past year, FWS coordinated a derelict crab trap clean-up within the Merritt Island National Wildlife Refuge, developed a monofilament brochure to encourage monofilament recycling, and participated in monofilament clean-ups and recycling efforts. In conjunction with Midwest Research Institute, FWS assisted in the development of a monofilament/recycling website and will participate in a series of educational workshops scheduled for 2002. The workshops will be a multi-agency effort focusing on promoting the new recycling website and instructing the public on how to start their own recycling program.

Manatee Rescue, Rehabilitation, and Release Activities

FWS biologists coordinate the manatee rescue, rehabilitation, and release program (Program) to treat injured and distressed animals. The Program participates in recovery efforts by assisting with distressed manatees and reintroducing them into the wild and by producing outreach materials which focus on the Florida manatee.

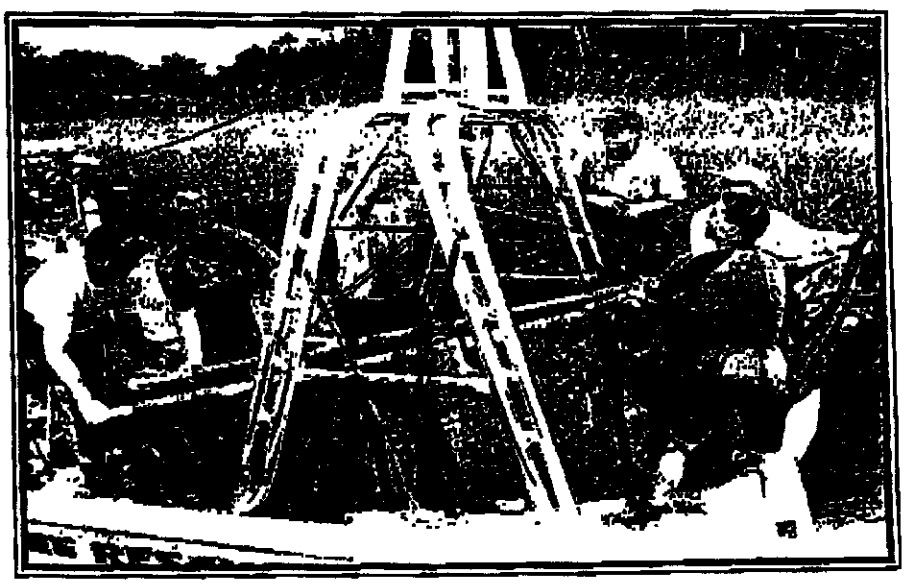
In 2001, a total of 66 manatees were rescued, of which 49 were brought into captivity and 17 were treated in the field and released. Reasons for rescue included boat strikes (23), entanglements (15), cold stress (11), abandoned calves (8) and other various causes (7), including one unknown. Of the 49 animals brought into captivity, 30 died as a result of their injuries or illnesses; one manatee captured the previous year died during 2001. At year's end 51 manatees, in eleven facilities, were in captivity for treatment, including those receiving long-term care; of these, 26 individuals are females and 25 are males. The Program released 22 captive manatees this year, 15 of which were rescued during 2001.

FWS authorizes 18 private organizations and works with several other State and Federal organizations to participate in the Program. The coordination of this Program is through the Service's Interagency Oceanaria Working Group. The group provides input on rescue and release planning and captive animal care. Two interagency oceanaria meetings took place during 2001; the spring meeting was held in Puerto Rico, which hosted a diverse group of Sirenian researchers from all over the world, and the fall meeting was held at Miami Seaquarium. In 2001, a steering committee, the Conservation Consortium for Rehabilitated Manatee Monitoring, was formed to coordinate post-release monitoring.



The Service designed an electronic database to facilitate data entry and storage for the program; this is the first of its kind to be implemented for endangered species management in the FWS.

The Program brings vast exposure to manatees and the problems which they face in Florida. Rescues and releases often get exposure from multi-media. The captive program allows for hundreds of thousands of people to see a manatee who often would not otherwise have the opportunity. The facilities that house these animals do an outstanding job of interpreting the challenges that manatees face and consistently promote a constituency for recovery efforts. As a result, the Program is one of FWS's most effective outreach tools which promote manatee protection and conservation.



Education and Outreach

Service outreach efforts to inform stakeholders and concerned citizens are generally handled through the Jacksonville Field Office's Public Affairs Officer. During 2001, the Service was inundated by questions and issues involving the lawsuit. Staff spent a great deal of time clarifying incorrect information regarding manatees and manatee protection efforts. Service manatee outreach and education efforts included preparing written responses to those seeking information on the manatee, the production and distribution of educational brochures, and presentations to various organizations, and public meetings. Refuge outreach programs are particularly effective to teach visitors about manatees and manatee conservation.

Recovery Planning

The third revision of the Florida manatee Recovery Plan was completed on October 30, 2001. This revision addresses specific criteria necessary for manatee reclassification to threatened and eventually delisting. The criteria set benchmarks and targets (as defined in the five listing criteria) to evaluate the success of various conservation measures to remove existing and future threats to recovery.

RECOVERY EFFORTS-FEDERAL PARTNERS

U.S. Geological Survey, Biological Resources Division, Sirenia Project

The Sirenia Project (Project) is part of the U.S. Geological Survey and Florida Caribbean Science Center, a Federally funded group dedicated to integrated science, promoting collaboration and sharing of expertise nationwide. The Project consists of a team of biologists committed to long-term research on the West Indian manatee in Florida and the Caribbean. The team collaborates with other scientists including those from other USGS centers, State and Federal partners, and other organizations.

During 2001, the Project was involved in many research activities associated with various aspects of manatee conservation and biology. The Manatee Individual Photo-identification System (MIPS) continued to document individual manatees on Florida's east and northwest coasts and in St. John's River system. This 20+ year database includes the specific identity and feature description data, photographic images, and over 23,000 sighting records and reproductive histories of almost 1,500 individual

manatees. This year the MIPS database was converted to an Access-based relational database to facilitate analysis with new state-of-the-art mark-resighting statistical models. This new design for MIPS allowed for the analysis to estimate adult survival rates for the subpopulations in the Northwest Gulf coasts, Blue Springs/St. John's River, and the Atlantic coasts. Collaboration with population statisticians continue to address manatee population dynamics. A model is currently under development to use parameter estimates from the MIPS database to estimate population growth rates and to assess how growth rates would change with variation in any of the vital rates.

An adaptive management model was initiated to address manatee population dynamics, specifically, manatee responses to changes in power plant operations. A monitoring program was designed and implemented in Brevard county at the Florida Power and Light Company, Canaveral power plant, and the Reliant Energy power plant. This program will assist in gathering data for a provisional adaptive resource management model using photo-identification data. The Project also initiated a collaboration with Mote Marine Laboratory and Florida Marine Research Institute to conduct a comparative study at Florida Power and Light Company, located in Ft. Myers.

The Project continued its strip-transect aerial surveys work with FWS in the Ten Thousand Islands National Wildfire Refuge (TINWR). Data from these surveys are being analyzed to determine if manatee density and distribution in nearshore waters of the of the TINWR and the Everglades National Park change as response to restoration of natural hydrologic patterns in southwestern Florida.

Manatees were captured in Port of the Islands near Everglades City and fitted with radio tags to track individual movements. This effort is part of a 5-year study initiated in FY2000, to assess the impact of hydrologic restoration on Estuarine communities of southwest Florida. It is suggested that manatee distribution, relative abundance, habitat use, and movement patterns will be affected by current and future restoration projects.

Other research activities in which the Project was involved included characterizing benthic habitat and manatee grazing activity in Puerto Rico, and analyzing mitochondrial DNA to extract information on manatee population genetics and information on manatee phylogeography. In addition to research, the Project team spent a great amount of time and effort organizing a Manatee Population Ecology and Management Workshop scheduled to be held in the Spring 2002. Project biologists had extensive involvement in the FWS Rescue, Rehabilitation, and Release Program including participation interagency meetings, workshops, and manatee rescues and releases.

RECOVERY EFFORTS-STATE PARTNERS

Florida Marine Research Institute

The Endangered and Threatened Species Section, responsible for manatee research, is headquartered at the FMRI in downtown St. Petersburg. All carcasses are retrieved by field station staff located in Port Charlotte, Jacksonville, Melbourne, and Tequesta, and the pathobiology lab is in St. Petersburg.

The information gained through FMRI's carcass salvage and rescue continues to be a crucial component in providing insight to manatee health, life history, general and reproductive biology, and providing data to assist in developing population models. Under FWS's Manatee Rescue, Release and Rehabilitation Program, FWC staff participated in the rescue of 66 animals, and releases of 22 rehabilitated animals.

Aerial surveys were conducted throughout the year to acquire information on manatee distribution, relative abundance, and use of habitat types. The statewide "synoptic" aerial survey of manatees conducted on January 5-6, 2001 yielded a record high count of 3, 276 individuals. The extreme and sustained record-breaking cold weather in January was thought to attribute to this high count, bringing manatees to congregate at warm-water sites. Intensive aerial surveys were flown during the winter to assess the accuracy of counts at the Tampa Bay power plants. Replicate aerial counts were conducted to calibrate survey procedures and better track manatee trends. Time/depth recorders were utilized for the first time to document the percent of time manatees spend at the surface. Sightings from aerial surveys were entered into a GIS program to assess manatee distribution and facilitate management decisions. Population models designed to estimate trends in regional population size are being developed based on information obtained from aerial surveys, mortality data, and life history and ecology studies.

Information on how manatees use coastal habitat in Florida is critical in determining what resources the population requires to expand and grow. The placement of satellite and radio transmitters on manatees enables researchers to follow individual manatee movements, and obtain details about behavior, migratory routes, and preferred habitats. Three rehabilitated manatees were tagged and

monitored by FMRI in 2001. In addition, four manatees were tagged in Warm Mineral Springs as part of a behavior and habitat use study, and five animals were tagged at Teco power plant in Tampa to assist in a calibration study.

Life history information is essential in formulating an assessment of manatee population dynamics and recovery. FMRI staff utilizes photo-identification, passive integrated transponders (PIT tags), and ultrasound measurements to acquire long-term data and survival of individuals, reproductive capability of mature females, and the health of wild manatees. Currently, the west-central and southwest MIPS catalogue maintained by FMRI contains over 3,300 images and 7,500 sightings, representing 700 manatees. FMRI staff conducted a photo-identification study for its fifth consecutive year at Big Bend power plant in Apollo Beach, Florida. A remote PIT tag reader was built and tested at a winter aggregation site. Modifications to this device are necessary before it can be used successfully.

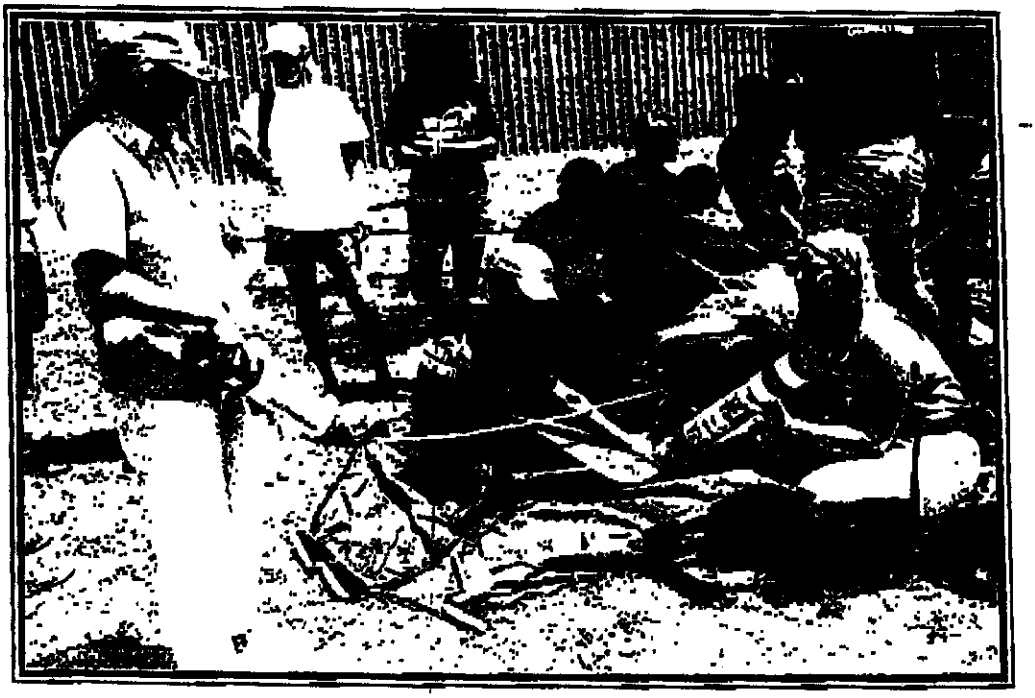
Understanding how the human population affects the manatee is crucial for recovery. Factors such as pollution, population growth, habitat modification and destruction, marine recreation and various causes of mortality are all related to human activities. Human-dimension studies have been developed to assess the effectiveness of various types of manatee protection messages. FMRI, in collaboration with several partners, initiated work on the characterization of recreational boating in Charlotte Harbor; results from this assessment will assist managers in decisions regarding manatees in the area. A baseline statewide study was completed on boater compliance within speed zones. Results indicated an average rate of 50% compliance where speed zones were posted. FMRI staff also assisted in the three-year study comparing education and regulation as tools for manatee protection. Results indicated that normative influences and law enforcement had the strongest effect on

motivating boater decisions. Additionally, FMRI participated in the Statewide manatee speed zone task force which aimed to increase compliance in manatee speed zones, both in the presence and absence of law enforcement.

The Bureau of Protected Species Management (BPSM)

The Bureau of Protected Species Management (BPSM) in Tallahassee serves as the management component of the FWC marine mammal program. BPSM is responsible for the planning and implementation of management activities involved in the protection and recovery of the Florida manatee, for implementing tasks of the Federal recovery plan, and serving as the Commission's primary liaison with other Federal, State, and local governments. Protection activities are implemented in four general ways: State rules are developed, manatee protection plans are developed and implemented with the assistance of local governments, permit applications for resource development are reviewed and commented upon, and Floridians and visitors are educated on how manatees and their habitat can be protected.

In April 2001, FWC voted to approve a settlement agreement with Save the Manatee Club *et al.* The agreement called for FWC to proceed with additional manatee protection rule making in many areas around the State. The first phase of the agreement identified 16 areas for possible additional protection. The investigation of these areas was initiated by BPSM staff. Additional speed boat sign posting and amendments to existing manatee protection zones continued to be a priority for BPSM. Staff also participated in a southwest public forum on manatee protection which brought together various government officials to address issues regarding future manatee protection in south Florida. Staff continued to issue permits for commercial and professional fishing guide activities in several counties. Furthermore, BPSM continued its coordination and involvement with Federal, State, and



local law enforcement agencies, reviewed permits and drafted agency opinions, participated in the interagency task force to eliminate structure-related manatee mortality, assisted in manatee habitat characterization, assessment and protection, distributed data and technical support, and conducted education and outreach activities centered on manatee biology, ecology, and conservation.

RECOVERY EFFORTS-PRIVATE PARTNERS (CAPTIVE PROGRAM)

The captive program relies on three main facilities (SeaWorld, Lowry Park Zoo, and Miami Seaquarium) to assist and conduct manatee rescue, rehabilitation and release. These partners house manatees for acute, critical, and long-term care. SeaWorld, located in Orlando, Florida, participated in over 20 manatee rescues and 11 releases during 2001. The manatee exhibit at SeaWorld provides funding for various research projects by the promotion of manatee license plates and decals. Lowry Park Zoo, located just west of Tampa, Florida. participated in approximately 13 rescues and 7 releases this past year. A Manatee Hospital Boardwalk offers guests the opportunity to view behind-the-scenes work in Lowry's manatee area. Miami Seaquarium, located in Miami, Florida, contributed to nearly ten rescues and seven releases during 2001. In October, the Seaquarium hosted the semi-annual Interagency/Oceanaria Meeting. The Dolphin Research Center, located in the middle of the Florida Keys, assisted in over ten rescues, participated in several releases, and served as verifier for dozens of manatee calls.

Other partners house manatees for acute and long-term care. These include the Mote Marine Laboratory, The Living Seas, Columbus Zoo and Aquarium, Cincinnati Zoo and Botanical Garden, and South Florida Museum/Parker Museum. Manatee World Inc. serves as a local verifier when needed in the Southwest area.

RECOVERY PARTNERS-PRIVATE PARTNERS (OTHER RECOVERY ACTIVITIES)

Other partners participate in a variety of recovery activities that promote education and conservation for the Florida manatee. Save the Manatee Club is the leading nonprofit organization dedicated exclusively to the protection of manatees and their habitat. They have an extensive volunteer base, provide numerous avenues of education and outreach, and afford financial assistance to manatee studies both in and out of the Unites States. Dade Environmental Resources Management (DERM) responded to numerous manatee phone calls and assisted FWC with carcass recovery. DERM staff attends bimonthly law enforcement agency meetings to discuss manatee protection concerns and

request additional enforcement needs when necessary. Florida Power and Light has been involved in manatee protection for over 25 years. Their contributions include the production of many manatee information materials, conducting various educational programs, sponsoring aerial surveys, and funding research and development projects aimed at identifying solutions to industrial warm water sources.

Photographs for this document were provided by the U.S. Fish and Wildlife Service, U.S. Geological Survey-Sirenia Project, Florida Fish and Wildlife Conservation Commission, Wildlife Trust, SeaWorld of Florida, Miami Seaquarium, Lowry Park Zoo, and Dolphin Research Center.

Additional manatee information may be obtained from the following sources:

U.S. Fish and Wildlife Service:
Jacksonville Field Office
http://www.fws.gov/r4jafl

U.S. Fish and Wildlife Service:
Vero Beach Field Office
http://southeast.fws.gov/verobeach/index.html

U.S. Fish and Wildlife Service:
Crystal River NWR
http://southeast.fws.gov/crystalriver/index.html

U.S. Geological Survey:
Sirenia Project
http://www.fcsc.usgs.gov/index.html

Florida Fish and Wildlife Conservation Commission:
Bureau of Protected Species Management:
http://fcn.state.fl.us/fwc

Florida Fish and Wildlife Conservation Commission:
Florida Marine Research Institute
http://www.floridamarine.org/

Georgia Dept of Natural Resources:
Nongame & Endangered Species Program
http://www.dnr.state.ga.us/

FDEP Division of Recreation and Parks:
Homosassa Springs State Wildlife Park
http://www.citruscounty-fl.com/statepark.html

FDEP Division of Recreation and Parks:
Blue Springs State Park
http://www.dep.state.fl.us/parks/District_3/BlueSpring/index.html

Save The Manatee Club
http://www.savethemanatee.org

SeaWorld of Florida
http://www.seaworld.com

Miami Seaquarium
http://miamiseaquarium.com

Lowry Park Zoo
http://www.lowryparkzoo.com

WDW Epcot::
Living Seas
http://www.disney.com

The South Florida Museum/Parker Aquarium
http://www.sfmbp.com/Museum/museum2.htm

Mote Marine Laboratory
http://www.marinelab.sarasota.fl.us

Cincinnati Zoo
http://www.cincyzoo.org

Columbus Zoo
http://www.colszoo.org

SeaWorld of California
http:/www.seaworld.com

Dolphin Research Center
http://www.dolphins.org

Caribbean Stranding Network
http://rcv.caribe.net

Dade Environmental Resource Management
http://www.metro-dade.com/derm/

The Call of the Siren
http://www.sirenian.org/caryn.html

Sirenews
http://pegasus.cc.ucf.edu/~smm/

News Clippings of Florida Manatees
http://www.n-jcenter.com/menus/

Sirenian International, Inc.
http://www.sirenian.org

Smithsonian Institution Sirenian Bibliography
http://www.si.edu/resource/faq/nmnh/sirenia.htm